

Abstracts

Sierra – Monday 3rd August

We construct a family of algebras of GK-dimension 4 that are almost AS-regular. These rings are connected graded noetherian algebras of global dimension 4 which are Koszul and have the Hilbert series of a polynomial ring in 4 variables, but fail to be Artin-Schelter Gorenstein and are thus not regular. In contrast, if R is a noetherian connected graded quadratic algebra of global dimension 3, it is regular by work of Stephenson and Zhang. Our algebras give a counterexample to a conjecture of Stafford and Rogalski on the nonexistence of “projective surfaces of GK-dimension 4.”

Yekuyjeli – Tuesday 4th August

In this talk I will explain a new kind of algebraic structure, namely a category with inner gauge groups. I will give several motivating examples. This structure appears naturally in the study of twisted deformation quantization of algebraic varieties. This will be mentioned at the end of the talk.

Wemyss - Wednesday 5th August

I'll motivate and introduce the reconstruction algebra (defined for any affine rational surface singularity) then show how it reduces the problem of understanding quotient singularities by finite subgroups of $GL(2)$ to that of quotients by finite subgroups of $SL(2)$.

Muller – Friday 7th August

Lie algebroids are a simultaneous generalization of Lie algebras and differential operators. We introduce a quotient category of the category of filtered Lie algebroid modules in the spirit of Noncommutative Projective Geometry, which should be thought of as a “non-commutative compactification” of the Lie algebroid. This non-commutative space should be thought of as a ‘family of non-commutative \mathbb{P}^n ’s’, an analogy we deepen by constructing a resolution of the diagonal analogous to the Beilinson resolution. This resolution gives a derived equivalence to a simpler algebra which is essentially a family of quivers over a commutative base.